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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
FOREST INSECT INVESTIGATIONS

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FOREST INSECT SURVEY - YOSEMITE NATIONAL PARK

SEASON OF 1944

by

J. E. Patterson

Forest Insect Laboratory  
Berkeley 4, California  
December 18, 1944

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FOREWORD

For the past eleven years an annual insect survey of the main recreational forests of Yosemite Park has been made by foresters of the National Park Service or by entomologists of the Bureau of Entomology and Plant Quarantine. Usually both agencies have contributed to the overall appraisement of the annual insect conditions in these forests so that a continuous loss record has been maintained for over a decade.

The purpose of these surveys has been mainly to determine the amount of insect damage annually sustained and to detect any increase in losses during the initial stages and before epidemic conditions occur. These data have been used primarily in formulating control recommendations. It is the purpose of this memorandum to report the insect conditions developed during 1944 in the park forests.

1. FIELD EXAMINATIONS.

Bureau of Entomology and Plant Quarantine; Berkeley Laboratory.

G. R. Struble, John E. Patterson. July-October, November 1944.

Yosemite National Park.

Maurice E. Thede. Throughout the season.

2. AREAS EXAMINED.

The pine belt from Mariposa Grove to Hetch-Hetchy. The recreational regions of Bridalveil Meadows, Illilouette, Yosemite Creek basin, Porcupine, Tenaya Lake and Tuolumne Meadows.

3. SURVEY METHODS.

Principally general reconnaissance. Road and trail traverse supplemented by lookout observations. These were used to gain an overall appraisal of extensive insect losses. Measured losses were obtained from cruises of roadside plots of which several were utilized, sampling infestations in all the pine species. The loss data on the roadside plots are summarized in tables 1 and 2.

4. CURRENT INSECT TRENDS.

a. The current insect trend in the ponderosa pine-sugar pine forests was generally static or increasing. A slight increase was noted in a few areas where local conditions apparently fostered this trend. Outside the areas where the 1943 infestations were influenced by the Power Line burn, losses were slightly increased over those prevailing a year ago. Notable heavy losses occurred locally in the upper reaches of Big Meadows, principally in sugar pine near Crane Flat. Generally faded trees occur singly and widely separated. Grouping of attacks was not observed in any part of these stands.

- b. The trend of infestations in the Jeffrey pine and lodgepole pine forests of the High Sierra has been definitely downward throughout the year. Decidedly low endemic loss conditions prevail in all areas of this region.

5. INSECTS INVOLVED IN PRESENT LOSSES.

Western pine beetle, Dendroctonus brevicomis Lec. in ponderosa pine; mountain pine beetle, D. monticolae Hopk., in sugar pine and lodgepole pine; Jeffrey pine beetle, D. jeffreyi Hopk., in Jeffrey pine; pine engraver beetle, Ips confusus Lec., in ponderosa pine and sugar pine; lodgepole needleminer, Recurvaria milleri Busck, in lodgepole pine.

6. SPECIAL DEVELOPMENTS DURING THE SEASON

A "Mono," or tornado-like wind, occurred during February 1944 which swept the western flank of the Sierras with destructive force wherever it reached the land surface. Blowdowns were localized in the park, but some areas suffered severely. The increased infestations in ponderosa pine and sugar pine at Crane Flat, Grouse Creek and in Mariposa Grove are believed largely due to beetle broods that developed in these windfalls. A few local fires occurred during the season on the western border of the park and they also have contributed some share in increased infestations near them.

7. AREAS REQUIRING SPECIAL ATTENTION.

There are several areas in the pine belt along the western border where current insect conditions warrant special attention.

- a. Mariposa Grove. Aggressive infestations have continued in these stands, resulting in increased losses in both ponderosa pine and sugar pine. Maintenance control is considered essential to preserve these high value trees. The number of currently infested trees is estimated between 20 and 30, mainly of large size.
- b. Grouse Creek. Losses in sugar pine have continued at a high level throughout this basin. A recleaning of the stands by direct control measures is warranted. The current loss is estimated to be between 50 and 70 large size sugar pines.
- c. Yosemite Valley. Due to intensive recreational use, the forests on the valley floor are annually subjected to abnormal infestation hazards. As a consequence it has been necessary to carry out annual control measures to keep losses down to the lowest practicable level. The current loss conditions are in no wise changed from previous status and continued maintenance control is highly desirable. In number of infested trees, this loss is estimated to be 45 trees of medium size.
- d. Big Meadows. Losses over the greater part of this area were greatly reduced by the control work carried out last year. The only part of the area requiring attention this year is the high ridge country lying between Crane Flat and the Cascade Creek divide. Here losses of moderate intensity, principally in sugar pine, have resulted from beetle broods that developed in windfalls early in the year and later

built up an aggressive infestation in standing timber. Conditions in these stands are critical and the current loss sufficiently serious to demand prompt control action by direct methods. The current loss on this area which needs to be treated is estimated between 60 and 80 trees of large size.

During the control operations it will be desirable to reclean the marginal areas of the Power Line burn to prevent the residual infestation in scorched trees from spreading into the adjacent standing timber.

#### 8. OTHER INSECT PROBLEMS.

The lodgepole pine needleminer, Recurvaria milleri Busck, is still active in the extensive lodgepole pine forests of the high Sierra region. The infested areas north of Tuolumne canyon were not observed, but south of this canyon the insect has not noticeably spread from the old center of infestation on Forsyth Pass. This infestation should be kept under close surveillance to detect any change in the present status.

Widespread infestation of the fir engraver beetle, Scolytus ventralis Lec. continues in the white fir and red fir forests. However, in late years its depredations have remained at a low level. Current losses show no change from this status.

#### 9. RECOMMENDATIONS.

- a. Maintenance control should be carried out during the winter and early spring periods in Mariposa Grove, in the road screen from Alder Creek to Chinquapin, in Grouse Creek basin, and on the valley floor. It is estimated that this work will require the treatment of from 120 to 150 infested trees.
- b. Direct control of the Crane Flat area in Big Meadows unit is recommended. This should be considered a special project since infestation conditions have reached the critical stage. Every effort should be made to treat all of the infested trees between Big Oak Flat road and the top of the divide between Crane Flat and Cascade Creek. The greater part of the current infestation is in sugar pine trees of large size. Any green windfalls encountered in the control area should be barked. The overwintering infestation is estimated between 60 and 80 trees.
- c. Recleaning of the upper margins of Power Line burn is considered desirable to eliminate persistent infestations in fire-injured trees. This work may be considered subordinate to the main control job but if possible should be completed by April 15. It will involve the treatment of approximately 60 trees of small to medium size.

The control work recommended on all areas will aggregate about 250 trees and since these trees are greatly scattered and mainly of the largest size, the cost of the work will be relatively high. An allotment of \$5,000 should be sufficient to take care of all the control work recommended. The peel-burn method of control is recommended.

Table 1. Recorded pine losses sustained on roadside plots in 1943.  
(Complete record)

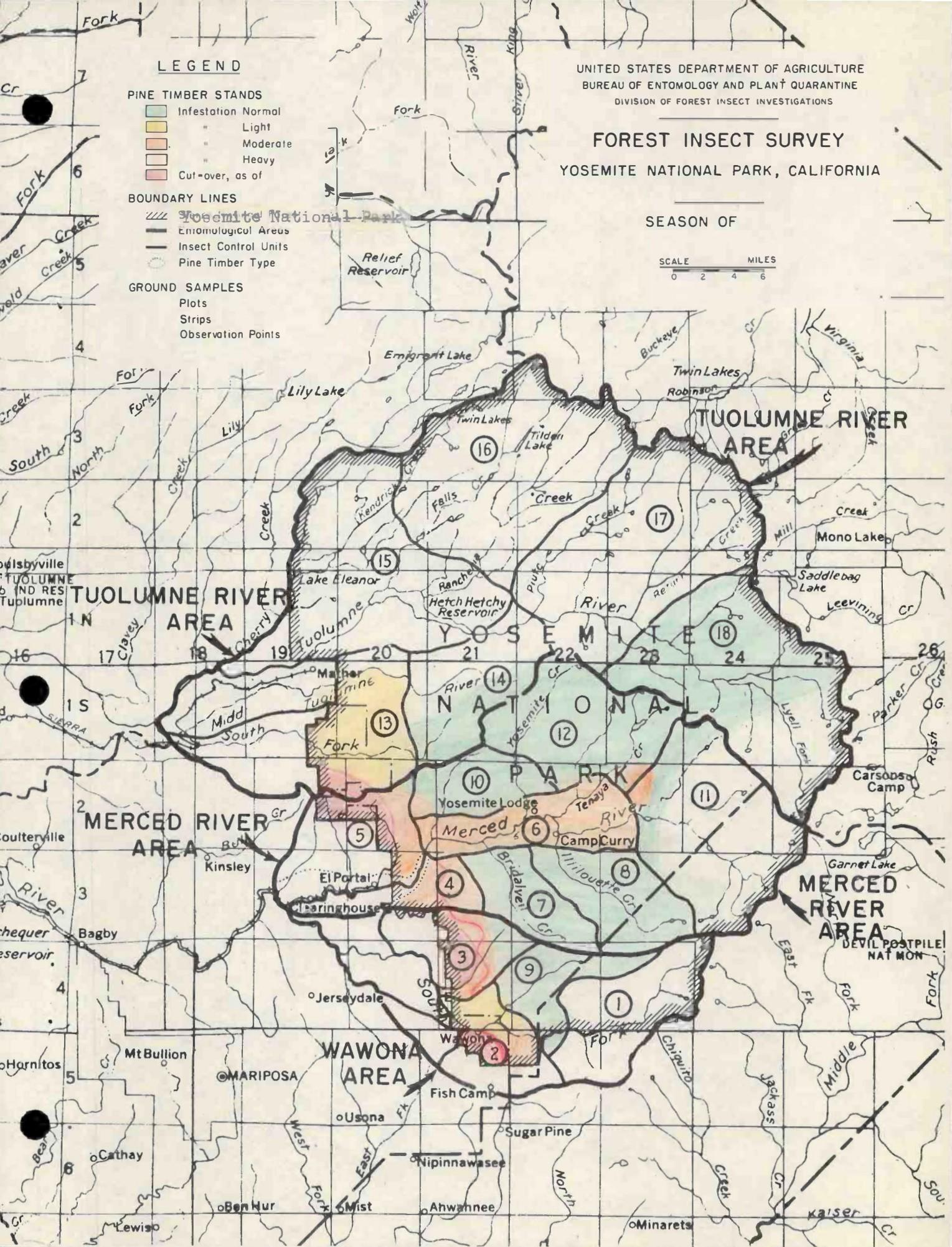
Area	Plot No.	Acreage	Tree Spp.	No. of trees	Volume	Total		
						Trees	Volume	Volume per acre
A	Mariposa Gr. 10 ✓	128	SP	4	25,110			
			PP	1	230	5	25,340	198
	Mariposa Gr. 11 ✓	32	SP	1	8,100			
			PP	1	7,630	2	15,730	500
	Wawona 1 ✓	304	SP	3	2,000			
			PP	8	5,860	11	7,860	26
	Alder Cr. 2 ✓	120	SP	2	2,430			
			PP	7	10,820	9	13,250	110
	Alder Cr. 3 ✓	184	SP	1	1,320			
			PP	8	7,470	9	8,790	48
		5		36	70,970	36	70,970	92
B	Chinquapin 4 ✓	164	SP	0	13,240			
			PP	12	13,240	12	13,240	81
	Chinquapin 12 ✓	160	JP	1	2,110	1	2,110	14
	Bridalveil 13 ✓	44	LP	19	2,570	19	2,570	60
	Big Meadows 5 ✓	244	SP	2	4,150			
			PP	8	16,930	10	21,080	90
	Yosemite 14 ✓ Valley	124	SP	0		0	0	0
			PP	0				
	Yosemite V. 15 ✓	76	PP	2	580	2	580	8
	Big Meadows 6 ✓	104	SP	2	5,310			
			PP	0		2	5,310	51
	El Capitan 8 ✓	140	JP	2	2,450	2	2,450	18
	El Capitan 9 ✓	44	LP	3	700	3	700	16
	Tenaya 16 ✓	60	LP	3	1,420	3	1,420	24
	Tenaya 17 ✓	96	LP	1	80	1	80	1
		11		55	49,540	55	49,540	40
C	Carlon 7	108	SP	0		0	0	0
			PP	0				
	Tuolumne 18	160	LP	3	1,390	3	1,390	9
		2		3	1,390	3	1,390	5
		268A						

Table 2. Recorded pine losses sustained on roadside plots in 1944.  
(Partial record)

Area	Plot	No.	Acreage	Tree Spp.	No. of trees	Volume	Total		Volume per acre
							Trees	Volume	
A	Mariposa Gr.	10	128	SP	2	19,470	2	19,470	151
	Mariposa Gr.	11	32	SP	0				0
				PP	0				0
	Wawona	1	304	SP	0				0
				PP	0				0
	Alder Creek	2	120	SP	0				80
				PP	3	9,180	3	9,180	
	Alder Creek	3	184	SP	1	380			
				PP	2	11,470	6	11,850	65
		5	768A		11	40,500	11	40,500	53
B	Chinquapin	4	164	SP	1	2,250			
				PP	3	5,170	4	7,420	45
	Chinquapin	12	160	SP	1	80	1	80	.5
	Big Meadows	5	244	SP	8	49,460			
				PP	2	500	10	49,960	205
	Big Meadows	6	104	SP	0				
				PP	2	6,590	2	6,590	
		4	672		17	64,050	17	64,050	95

Table 3. Estimated insect-caused losses in pine on reporting areas and control units for the years 1943 and 1944.

Rep't area	Control Unit	Timbered Acreage	Timber killed in 1943 (complete record)			Timber killed in 1944 (partial record)		
			Trees	MBM	Trees per section	Trees	MBM	Trees per section
A	1 Moraine	15,300	no data			no data		
	2 Wawona	12,360	300	510	15	200	300	10
	3 Alder Cr.	14,520	270	330	12	225	320	10
	9 Chilnaulna	12,500	100	48	5	75	40	4
		54,680	670	888		500	660	
B	4 Chinquapin	11,300	360	360	20	240	250	12
	5 Big Meadows	21,200	500	450	15	400	500	12
	6 Yosemite Valley	9,600	60	32	4	45	25	3
	7 Bridalveil	11,500	90	11	5		no data	
	8 Illilouette	29,600	140	85	3	80	50	2
	10 El Capitan	25,500	160	130	4	120	100	3
	11 Isberg	49,500	no data			no data		
	12 Tenaya	32,500	250	25	10		no data	-
		190,700	1,560	1,093		885	925	
C	13 Carlon	26,880	120	100	3	100	80	3
	14 White Wolf	25,600	350	22	8		no data	
	15 Hetch-Hetchy	85,600	no data			no data		
	16 Tilden	55,000	no data			no data		
	17 Matterhorn	70,000	no data			no data		
	18 Tuolumne	65,000	320	40	8		no data	-
		328,080	790	162		100	80	



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